

1 ENERGY AND ENVIRONMENT CABINET

2 Department for Environmental Protection

3 Division of Water

4 (Amendment)

5 401 KAR 8:150. Disinfection, filtration, and recycling.

6 RELATES TO: KRS 224.10-100, 224.10-110, 40 C.F.R. 141.70-141.76, EO 2009-538  
7 [~~2008-507, 2008-531~~]

8 STATUTORY AUTHORITY: KRS 224.10-100(28), 224.10-110(2), 40 C.F.R., 141.21,  
9 141.65, 141.70-141.76, 141.130(d), 141.400-141.405, 141.500-141.605, 141.700-141.723,  
10 142.16, 42 U.S.C. 300f-300j-26, EO 2009-538

11 NECESSITY, FUNCTION, AND CONFORMITY: KRS 224.10-100(28) and 224.10-110(2)  
12 authorize the cabinet to promulgate administrative regulations for the regulation and control of  
13 the purification of water for public and semipublic use. EO 2009-538, effective June 12, 2009,  
14 establishes [~~2008-507 and 2008-531, effective June 16, 2008, abolish the Environmental and~~  
15 ~~Public Protection Cabinet and establish~~] the new Energy and Environment Cabinet. This  
16 administrative regulation establishes requirements for the disinfection, filtration, recycling, and  
17 testing of drinking water in a public or semipublic water system using surface water or  
18 groundwater not under the direct influence of surface water. This administrative regulation  
19 differs from the federal regulation by requiring filtration of [~~on~~] water supplies that have surface  
20 water sources and disinfection of water supplies whose source is groundwater.

21 Section 1. Disinfection. A public and semipublic water system shall provide disinfection,

1 except as provided in this section. A semipublic water system shall comply with the  
2 requirements of this section for public water systems or meet the requirements of Section 2(2) of  
3 this administrative regulation.

4 (1) A public water system using groundwater or surface water as a source.

5 (a) A public water system that uses chlorine shall:

6 1. Use continuous automatic disinfection by chlorination;

7 2. Provide a minimum free chlorine residual of two-tenths (0.2) milligrams per liter, or ppm,  
8 throughout the distribution system measured as described in subsection (2) of this section;

9 3. Check free chlorine residuals daily at representative points throughout the system; and

10 4. Report the free chlorine residuals monthly pursuant to 401 KAR 8:020, Section 2(7)(2).

11 (b)1. Disinfecting agents other than chlorine may be used pursuant to 40 C.F.R. 141.172(c),  
12 [~~effective July 1, 2007,~~] or if approved by the cabinet prior to January 1, 2009.

13 2. If chloramination is used, a minimum combined residual of five-tenths (0.5) milligrams  
14 per liter, or ppm, shall be provided throughout the distribution system.

15 (2) A public water system using surface water as a source or groundwater under the direct  
16 influence of surface water shall provide disinfection treatment as established in 40 C.F.R.  
17 141.72(b)[~~, effective July 1, 2007~~].

18 (3) If a disinfection residual fails to comply with Section 1(1) of this administrative  
19 regulation, the public shall be notified in accordance with 401 KAR 8:020, Section 2(9).

20 (4) Variances or exemptions shall not be granted for subsection (2) of this section.

21 Section 2. Filtration. (1) A public water system using a surface water source or a  
22 groundwater system with wells with variable or high turbidity due to characteristics of the raw  
23 water that may cause an adverse health effect shall establish a filtration system. The design for

1 the system shall be submitted to the cabinet in accordance with 401 KAR 8:100 and shall comply  
2 with 40 C.F.R. 141.73~~[, effective July 1, 2007]~~.

3 (2)(a) A semipublic water system shall provide a contact period of at least thirty (30) minutes  
4 between the chorine and the water to allow adequate time for disinfection, or may enter into a  
5 protocol with the cabinet whereby the filtration and disinfection requirements of this  
6 administrative regulation shall be achieved using filtration technology, disinfection technology,  
7 or a combination of both, if the technology shall achieve a ninety-nine and nine-tenths (99.9)  
8 percent (3-log) removal or inactivation of Giardia lamblia cysts and 99.99 percent (4-log)  
9 removal or inactivation of viruses.

10 (b) The protocol shall contain a schedule for maintenance and testing of the filtration and  
11 disinfection equipment to assure that the requirements of this subsection are met.

12 (c) Intensive bacteriological testing shall be included in the protocol.

13 (d) If surface water is a source of water, filtration shall be an element of the protocol.

14 (e) If groundwater not under the direct influence of surface water is the only source of water,  
15 a semipublic water system eligible under this subsection may enter into a protocol with the  
16 cabinet to demonstrate through a regular schedule of bacteriological testing that filtration or  
17 disinfection is not needed.

18 Section 3. Analytical and Monitoring Requirements. (1) Analytical requirements. Analyses  
19 required by this administrative regulation shall be conducted in accordance with the requirements  
20 of 40 C.F.R. 141.74(a)~~[, effective July 1, 2007]~~.

21 (2) Monitoring requirements. A public water system that uses a surface water source or a  
22 groundwater source under the influence of surface water shall monitor in accordance with 40  
23 C.F.R. 141.74(c)~~[, effective July 1, 2007]~~.

Section 4. Disinfection of Treatment and Distribution System Facilities, New and Repaired Water Lines. (1) New construction projects and line extensions.

(a) Disinfection [~~of water lines~~]. A water treatment plant or distribution system, including storage distribution tanks, or extensions to existing systems, shall be thoroughly disinfected before being placed in service.

(b) A water distribution system shall disinfect with chlorine or chlorine compounds in amounts that shall produce a concentration of at least fifty (50) ppm and a residual of at least twenty-five (25) ppm at the end of twenty-four (24) hours, and the disinfection shall be followed by a thorough flushing.

(c) Other methods and testing procedures that provide an equivalent level of protection may be used if the cabinet grants prior written approval in accordance with 40 C.F.R. 141.21[~~;~~ effective July 1, 2007].

(d) A new water distribution line shall not be placed into service until bacteriological samples taken at the points specified in paragraph (f) of this subsection are examined and are shown to be negative following disinfection.

(e) A water treatment plant or distribution system shall submit to the cabinet results of bacteriological samples for each new construction project, replacement, or extension to existing systems, after the disinfection and flushing.

(f) A sample shall be taken in the newly constructed line at each of the following points:

1. Within 1,200 feet downstream of each connection point between the existing and new lines;
2. One (1) mile intervals; and
3. Each dead end, without omitting any branch.

1 (g) A new or routine replacement line shall not be placed in service until negative laboratory  
2 results are obtained on the bacteriological analyses.

3 (h) Sample bottles shall be clearly identified as "special" construction tests, and the results  
4 submitted to the cabinet shall be clearly marked as "special" samples.

5 (i)1. Notification of analytical results shall be submitted to the cabinet with the routine  
6 monthly compliance bacteriological samples, unless the bacteriological samples are to be used to  
7 lift a boil water advisory.

8 2. Samples used to lift a boil water advisory shall be submitted to the cabinet as soon as  
9 results are known.

10 (2) Line repairs due to breaks or ruptures.

11 (a) The system shall thoroughly flush the break area and maintain at least a minimum  
12 disinfectant residual, pursuant to Section 1(1) of this administrative regulation.

13 (b) The system may leave the line in service or return the line to service before receiving  
14 bacteriological results and may forego a boil water advisory if:

15 1. Pressure is maintained;

16 2. The break area is thoroughly flushed; and

17 3. At least the minimum disinfectant residual is maintained, pursuant to Section 1(1) of this  
18 administrative regulation.

19 (c)1. The system shall take at least two (2) bacteriological tests, one (1) located before, or  
20 just upstream of, the break or rupture, and one (1) located behind, or just downstream of, the  
21 break or rupture, as close to the break or rupture as practical pursuant to 40 C.F.R. 141.21[  
22 ~~effective July 1, 2007~~]. Additional samples may be required, if necessary to be representative of  
23 the area affected by the break.

2. Sample bottles shall be clearly identified as "special" tests, and the results submitted to the cabinet shall be clearly marked as "special" samples

(d)1. Records of results shall be submitted to the cabinet with routine monthly compliance samples, unless the samples are required to lift a boil water advisory, and shall be maintained for one (1) year. 2. Samples needed to remove a boil water advisory shall be submitted to the cabinet as soon as the results are known.

(e) A water system shall notify the cabinet immediately if:

1. The pressure drops below twenty (20) pounds per square inch in the distribution system surrounding the break; or

2. A break or rupture occurs that requires more than eight (8) hours to repair, with the eight (8) hours beginning when the water system becomes aware of the break.

(f) Boil Water Advisories shall be issued in accordance with 401 KAR 8:020, Section 2(9).

(g) Reports pursuant to 401 KAR 8:020, Section 2(7)(c) shall not be required for a loss of pressure, break, or rupture occurring in service lines serving only one (1) single family residence.

(h)1. A community or nontransient noncommunity public water system shall maintain a log of all breaks or ruptures, which shall include the:

a. Date and location of the break or rupture;

b. Time it was discovered;

c. Population affected;

d. Length of time required to repair the break or rupture;

e. Date and time disinfectant residuals are detected; and

f. Date and time bacteriological samples are taken.

2. The log shall be available for inspection by the cabinet.

1       Section 5. Uncovered Facility. A public or semipublic water system subject to this  
2 administrative regulation shall not begin construction of an uncovered finished water storage  
3 facility.

4       Section 6. Recycling. A public water system shall comply with the requirements established  
5 in 40 C.F.R. 141.76~~[, effective July 1, 2007]~~.

6       Section 7. In addition to the other requirements of this administrative regulation, for  
7 disinfection and filtration, a public water system that uses surface water as a source and that  
8 serves 10,000 or more persons, shall meet the requirements established in 40 C.F.R. 141.170 and  
9 ~~[,] 141.172. through 141.175[, and 141.65, effective July 1, 2007]~~.

10       Section 8. In addition to the other requirements of this administrative regulation for  
11 disinfection and filtration, a public water system that uses surface water as a source and that  
12 serves less than 10,000 persons shall meet the requirements established in 40 C.F.R. 141.500  
13 through 141.571~~[, and 141.65, effective July 1, 2007]~~.

14       Section 9. In addition to the other requirements of this administrative regulation for  
15 disinfection and filtration, a public water system that uses surface water as a source shall meet  
16 the requirements for enhanced treatment for Cryptosporidium as established in 40 C.F.R. 141  
17 Subpart W, 141.700 through 141.723~~[, effective July 1, 2007]~~.

18       Section 10. In addition to the other requirements of this administrative regulation for  
19 disinfection and filtration, a public water system that uses groundwater as a source shall comply  
20 with the requirements established in 40 C.F.R. 141.400 through 141.405~~[, 141.65, and 142.16(e);~~  
21 ~~effective July 1, 2007]~~.

401 KAR 8:150, “Disinfection, filtration and recycling” approved for promulgation:

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Date

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Leonard K. Peters, Secretary  
Energy and Environment Cabinet

PUBLIC HEARING AND PUBLIC COMMENT PERIOD: A public hearing on this administrative regulation shall be held on April 26, 2010 at 5:00 P.M. (Eastern Time) at 300 Fair Oaks Lane, Conference Room 301D, Frankfort, Kentucky. Individuals interested in being heard at this hearing shall notify this agency in writing by April 19, 2010, five workdays prior to the hearing, of their intent to attend. If no notification of intent to attend the hearing is received by that date, the hearing may be canceled. This hearing is open to the public. Any person who wishes to be heard will be given an opportunity to comment on the proposed administrative regulation. A transcript of the public hearing will not be made unless a written request for a transcript is made. If you do not wish to be heard at the public hearing, you may submit written comments on the proposed administrative regulation. Written comments shall be accepted until April 30, 2010. Send written notification of intent to be heard at the public hearing or written comments on the proposed administrative regulation to the contact person.

CONTACT PERSON: Abigail Powell, Regulations Coordinator  
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## REGULATORY IMPACT ANALYSIS AND TIERING STATEMENT

Administrative Regulation #: 401 KAR 8:150

Contact Person: Peter Goodman, Assistant Director

**(1) Provide a brief summary of:**

- (a) What this administrative regulation does:** This administrative regulation establishes requirements for the disinfection and filtration of water in public and semipublic water systems and recycling of spent filter backwash water, thickener supernatant, and liquids from dewatering processes.
- (b) The necessity of this administrative regulation:** KRS 224.10-100(28) and 224.10-110 authorize the cabinet to adopt and enforce administrative regulations for the purification of water for public and semipublic use, and for the construction and operation of water treatment systems and distribution systems. This regulation sets forth requirements for filtration, disinfection, and recycling of spent filter backwash water.
- (c) How this administrative regulation conforms to the content of the authorizing statutes:** KRS 224.10-100(28) and 224.10-110 authorize the cabinet to adopt and enforce administrative regulations for the purification of water for public and semipublic use, and for the construction and operation of water treatment systems and distribution systems.
- (d) How this administrative regulation currently assists or will assist in the effective administration of the statutes:** The purification of drinking water consists of filtration for surface water systems to remove suspended contaminants and disinfection of both surface water and groundwater to inactivate microbiological organism that may be harmful to public health.

**(2) If this is an amendment to an existing administrative regulation, provide a brief summary of:**

- (a) How the amendment will change this existing administrative regulation:** The amendments to this administrative regulation simply update federal citations. The substantive requirements of the existing regulation are unchanged.
- (b) The necessity of the amendment to this administrative regulation:** This amendment will allow future changes in federal regulatory requirements to be more easily adopted.
- (c) How the amendment conforms to the content of the authorizing statutes:** The amendments to this administrative regulation simply update federal citations. The requirements of this administrative regulation, both state and federal, are designed to ensure the clarity and microbiological purity of drinking water in public or semipublic water systems.
- (d) How the amendment will assist in the effective administration of the statutes:** This proposed amendment will allow future changes in federal regulatory requirements to be more easily adopted.

**(3) List the type and number of individuals, businesses, organizations, or state and local governments affected by this administrative regulation:** This regulation applies to 479 public water systems, 52 semi-public water systems and 7 bottled water systems.

**(4) Provide an analysis of how the entities identified in question (3) will be impacted by**

either the implementation of this administrative regulation, if new, or by the change, if it is an amendment, including:

- (a) **List the actions that each of the regulated entities identified in question (3) will have to take to comply with this administrative regulation or amendment:** The amendments to this regulation simply update federal citations. The substantive requirements of the regulated entities are unchanged in this regulation.
  - (b) **In complying with this administrative regulation or amendment, how much will it cost each of the entities identified in question (3):** The costs of complying with this regulation are unchanged.
  - (c) **As a result of compliance, what benefits will accrue to the entities identified in question (3):** Public and semipublic water systems will benefit from reassurance that the requirements of this administrative regulation are no more stringent than the federal requirements.
- (5) **Provide an estimate of how much it will cost the administrative body to implement this administrative regulation:**
- (a) **Initially:** The requirements of this regulation are unchanged from regulations currently in place. Costs of implementation will remain the same.
  - (b) **On a continuing basis:** The requirements of this regulation are unchanged from regulations currently in place. Costs of implementation will remain the same.
- (6) **What is the source of the funding to be used for the implementation and enforcement of this administrative regulation?** The source of funding for the drinking water program is federal funds provided to administer the requirements of the Safe Drinking Water Act.
- (7) **Provide an assessment of whether an increase in fees or funding will be necessary to implement this administrative regulation, if new, or by the change if it is an amendment:** No increase in fees or funding is expected to be necessary to implement this administrative regulation.
- (8) **State whether or not this administrative regulation established any fees or directly or indirectly increased any fees:** This administrative regulation does not establish a fee or directly or indirectly increase fees.
- (9) **TIERING: Is tiering applied? (Explain why or why not)**  
Yes. This administrative regulation is tiered by type of water used as a source, and by the number of persons served by the public water system.

## FISCAL NOTE ON STATE OR LOCAL GOVERNMENT

**Regulation #:** 401 KAR 8:150

**Contact Person:** Peter Goodmann, Assistant Director

1. **Does this administrative regulation relate to any program, service, or requirements of a state or local government (including cities, counties, fire departments, or school districts)?**  
Yes   X   No         
If yes, complete questions 2-4.
2. **What units, parts or divisions of state or local government (including cities, counties, fire departments, or school districts) will be impacted by this administrative regulation?**  
This regulation applies to public and semipublic water systems. A unit of state or local government that owns a public water system will be impacted by this regulation.
3. **Identify each state or federal statute or federal regulation that requires or authorizes the action taken by the administrative regulation.** KRS 224.10-100(28) and 224.10-110 authorize the cabinet to adopt and enforce administrative regulations for the purification of water for public and semipublic use, and for the construction and operation of water treatment systems and distribution systems. The Safe Drinking Water Act (42 U.S.C. 300f through 300j-26) requires the establishment of national primary drinking water regulations. 40 C.F.R. 141.170, 141.172-175, and 141.65 establish requirements for enhanced surface water treatment for systems serving 10,000 or more persons. 40 C.F.R. 141.500-141.605 and 141.65 establish requirements for enhanced surface water treatment for systems serving fewer than 10,000 persons. 40 C.F.R. 141.700-141.723 are new requirements of the LT2ESWTR. Finally, 40 C.F.R. 141.400-405 is the new groundwater regulation.
4. **Estimate the effect of this administrative regulation on the expenditures and revenues of a state or local government agency (including cities, counties, fire departments, or school districts) for the first full year the administrative regulation is to be in effect.**
  - (a) **How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for the first year?** This administrative regulation will not generate any revenue in the first year.
  - (b) **How much revenue will this administrative regulation generate for the state or local government (including cities, counties, fire departments, or school districts) for subsequent years?** This administrative regulation will not generate any revenue for subsequent years.
  - (c) **How much will it cost to administer this program for the first year?** The proposed amendments to this administrative regulation simply update federal citations; they will not impose any additional cost for the first year.
  - (d) **How much will it cost to administer this program for subsequent years?** The proposed amendments to this administrative regulation simply update federal citations; they will not impose any additional cost in subsequent years.

## FEDERAL MANDATE ANALYSIS COMPARISON

Administrative Regulation#: 401 KAR 8:150

Contact Person: Peter Goodman, Assistant Director

### **1. Federal statute or regulation constituting the federal mandate.**

42 U.S.C. Chapter 6A, Subchapter XII, The Safe Drinking Water Act, requires the establishment of national primary drinking water regulations. 40 C.F.R. 141.170, 141.172-175, and 141.65 establish requirements for enhanced surface water treatment for systems serving 10,000 or more persons. 40 C.F.R. 141.500-141.605 and 141.65 establish requirements for enhanced surface water treatment for systems serving fewer than 10,000 persons. 40 C.F.R. 141.700-141.723 are requirements of the LT2ESWTR. Finally, 40 C.F.R. 141.400-405 and 142.16(o) are the groundwater regulation.

### **2. State compliance standards.**

224.10-100(28), 224.10-110(2)

### **3. Minimum or uniform standards contained in the federal mandate.**

The federal regulations require both surface water and groundwater systems to meet certain standards for the microbiological quality of the water or provide additional treatment or disinfection. It is possible, under the federal regulations, for surface water systems to avoid filtration and groundwater systems to avoid disinfection.

### **4. Will this administrative regulation impose stricter requirements, or additional or different responsibilities or requirements than those required by the federal mandate?**

The amendment to this regulation does not introduce any requirements more stringent than the federal regulation. However, the existing regulation does contain a requirement that is different from the federal regulation, and that requirement is not changing. Portions of this regulation are promulgated under KRS 224.10-110 and precede federal requirements. Because of the nature of Kentucky's surface water the cabinet has long required filtration of surface water. Under the federal regulation, it is theoretically possible for a surface water system to avoid filtration. Similarly, because of the karstic nature of Kentucky's groundwater geology, the cabinet has long required disinfection of groundwater. Under the federal groundwater regulation, it is possible to avoid disinfection. The cabinet also requires a higher residual disinfection level in distribution systems, two-tenths milligrams per liter, versus "detectable" in the federal regulation.

### **5. Justification for the imposition of the stricter standard, or additional or different responsibilities or requirements.**

Many of Kentucky's public water systems depend heavily on surface water sources. Surface water sources in Kentucky have very few watershed control standards in place to protect them from various kinds of runoff contamination. Consequently, for over 33 years, the cabinet has required complete filtration and disinfection for public water sources using surface water as a source. Similarly, groundwater in Kentucky is in karst geological formations that can allow microbiological contamination to occur. Consequently, for over 33 years, the cabinet has required disinfection of groundwater. The cabinet considers these requirements reasonable and prudent to protect public health.